This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) An excimer or molecular fluorine laser, comprising:

a laser tube filled with a laser gas;

an optical resonator;

a discharge circuit; and

a plurality of electrodes within the laser tube connected to ~~a~~ said discharge circuit for exciting the laser gas to produce a laser output beam, said discharge circuit including a solid state switch configured to switch a voltage needed to produce desired pulse energies, the switch comprising a plurality of insulated gate bipolar transistors (IGBTs) including a parallel combination and each path of the parallel combination includes a single IGBT.

Claim 2-4. (canceled)

5. (original) The laser of claim 1 wherein the solid state switch is configured to switch a voltage signal in excess of 12 kV.

6. (original) The laser of claim 5 wherein the solid state switch has a rise time of less than 300ns.

7. (original) The laser of claim 5 wherein the solid state switch has a rise time of less than 100ns.

Claims 8-9. (canceled)

10. (currently amended) An excimer or molecular fluorine laser, comprising:

a laser tube filled with a laser gas;

an optical resonator;

a discharge circuit; and

a plurality of electrodes within the laser tube connected to ~~a~~ said discharge circuit for exciting the laser gas to produce a laser output beam, said discharge circuit including a solid state switch configured to switch a voltage needed to produce desired pulse energies,

wherein peaking capacitors from which current pulses are applied to the electrodes are positioned as close as possible to the electrodes, and sustainer capacitors, also from which current pulses are applied to the electrodes, have an enlarged inductance between them and the discharge electrodes for extending the current pulse.

11. (original) The laser of claim 1 further including a protective circuit coupled in parallel to said solid state switch.

12. (original) The laser of claim 11 wherein said protective circuit includes a diode 15 and a saturable inductor.

13. (original) The laser of claim 11 wherein said protective circuit includes a resistor and a capacitor connected in series.

14. (previously presented) An excimer or molecular fluorine laser, comprising:

a laser tube filled with a laser gas;

an optical resonator;

a discharge circuit;

a plurality of electrodes within the laser tube connected to the discharge circuit for exciting the laser gas to produce a laser output beam, said discharge circuit including a solid state switch configured to switch between half and a quantity less than a voltage needed to produce desired pulse energies, the switch comprising a plurality of insulated

gate bipolar transistors (IGBTs) including a parallel combination and each path of the parallel combination includes a single IGBT, and

wherein the discharge circuit includes a voltage doubling circuit configured to approximately double the voltage signal applied to a pulse compressor circuit before the pulse reaches the electrodes.

15. (original) The laser of claim 14 wherein the solid state switch is configured to switch at least 10 kV.

Claims 16-18. (canceled)

19. (original) The laser of claim 14, wherein the voltage doubling circuit includes a pair of capacitors.

20. (original) The laser of claim 19 wherein each of said pair of capacitors includes a plate connected to an output of the switch.

21. (original) The laser of claim 20 wherein a second plate of a first of said pair of capacitors is coupled to the pulse compressor circuit and a second plate of a second of said pair of capacitors is coupled to a ground terminal.

22. (currently amended) The laser of claim 21, wherein the ~~dischare-~~ discharge circuit is configured such that when the switch closes, the pair of capacitors are each configured to acquire a voltage substantially equal to the voltage of a main initial storage capacitor charged prior to the switch being closed, and the sum of the voltages across the pair of capacitors being double the switching voltage such that the switching voltage is approximately half the voltage applied at the main laser discharge electrodes.

23. (currently amended) An excimer or molecular fluorine laser, comprising:

[[a]] an oscillator laser tube filled with a laser gas;

an oscillator optical resonator;

[[a]] an oscillator laser discharge circuit; and

a plurality of electrodes within the oscillator laser tube connected to [[a]] the oscillator discharge circuit for exciting the laser gas in the oscillator laser tube to produce an oscillator laser output beam~~, said discharge circuit including an solid state switch, and~~

an amplifier laser tube filled with a laser gas;

an amplifier optical resonator;

a an amplifier laser discharge circuit; and

a plurality of electrodes within the amplifier laser tube connected to the amplifier discharge circuit for exciting the laser gas in the amplifier laser tube to produce an amplified laser output beam;

~~wherein the~~ a solid state switch which is connected to each of [[an]] the oscillator laser discharge circuit and [[an]] the amplifier laser discharge circuit,

wherein an electrical delay circuit is coupled between the solid state switch and the ~~electrical pulse applied to the~~ amplifier laser discharge circuit, whereby an electrical pulse which is transmitted through the switch and applied to the amplifier laser discharge circuit is delayed from [[that]] an electrical pulse applied to the oscillator laser discharge circuit;

wherein [[an]] the oscillator laser output beam ~~output pulse from the oscillator laser~~ is optically directed into the amplifier laser tube ~~of the amplifier laser~~ at a substantially same time as when ~~the~~ an electrical pulse is applied to the electrodes connected to the amplifier discharge circuit ~~of the amplifier laser~~; and

wherein the position of the oscillator laser ~~pulse~~ output beam in the ~~discharge region of the~~ amplifier laser tube at the time of [[the]] a discharge of the amplifier laser tube increases the output of the oscillator laser output beam to a desired level.

24. (original) The laser of claim 23 wherein the voltage across the switch is substantially the same as the voltage applied to the discharge electrodes of the oscillator laser, and is less than the voltage required to produce the substantially similar level of output pulse energy of the oscillator laser without the amplifier pulse.

25. (original) The laser of claim 23 wherein the switch includes a plurality of IGBTs.

26. (currently amended) An excimer or molecular fluorine laser, comprising:

[[a]] an oscillator laser tube filled with a laser gas;

an oscillator optical resonator;

[[a]]-an oscillator discharge circuit; and

a plurality of electrodes within the oscillator laser tube connected to [[a]] the oscillator discharge circuit for exciting the laser gas in the oscillator discharge circuit to produce [[a]] an oscillator laser output beam~~, said discharge circuit including a first solid state switch and a second solid state switch~~;

an amplifier laser tube filled with a laser gas;

an amplifier optical resonator;

~~a~~ an amplifier laser discharge circuit; and

a plurality of electrodes within the amplifier laser tube connected to the amplifier discharge circuit for exciting the laser gas in the amplifier laser tube to produce an amplified laser output beam;

wherein ~~the~~ a first solid state switch is connected to [[an]] the oscillator laser discharge circuit and [[the]] a second solid state switch is connected to [[an]] the amplifier laser discharge circuit;

an electrical delay circuit connected to the second switch, whereby in response to a trigger signal the first switch applies an electrical pulse to the oscillator discharge circuit and the second switch applies an electrical pulse to the amplifier discharge circuit, and whereby the electrical pulse applied to the amplifier discharge circuit is delayed for an amount of time which corresponds to a delay caused by the electrical delay circuit;

~~wherein an electrical pulse applied to the amplifier laser discharge circuit including the first switch is delayed from that applied to the oscillator laser discharge circuit including the second switch;~~

wherein the oscillator laser output beam ~~an output pulse from the oscillator laser~~ is optically directed into the amplifier laser tube ~~of the amplifier laser~~ at a substantially the same time as when [[the]] an electrical pulse is applied to the electrodes connected to the amplifier discharge circuit ~~of the amplifier laser~~; and

wherein the oscillator laser output beam is amplified by a discharge in the amplifier laser tube ~~in the discharge region of the amplifier laser at the time of the discharge of the amplifier laser increases the output energy of the oscillator laser to a desired level~~.

27. (original) The laser of claim 26 wherein the voltage across the first switch is substantially the same as the voltage applied to the electrodes of the oscillator laser, and less than the voltage required to produce the same output pulse energy of the oscillator laser without the amplifier pulse.

28. (original) The laser of claim 27 wherein said first and second switches are synchronized such that said delay is controlled.

29. (original) The laser of claim 26 wherein a trigger signal applied to each of the first and second solid state switches is delayed before the second solid state switch.

30. (previously presented) An excimer or molecular fluorine laser, comprising:

a laser tube configured to be filled with a laser gas;

an optical resonator; and

a plurality of discharge electrodes disposed within a discharge chamber, the chamber including a pair of discharge electrodes coupled to a discharge circuit for exciting the laser gas for generating a laser output beam, the discharge circuit including a solid state switch comprised of a plurality of insulated gate bipolar transistors (IGBTs) configured to switch a voltage signal of between 12 and 25 kV, the switch including a parallel combination and each path of the parallel combination includes a single IGBT.

31. (original) The laser of claim 30 wherein the IGBTs have a rise time of less than 100ns.

32. (original) The laser of claim 31 further including a voltage doubling circuit configured to double the voltage signal applied to a pulse compressor circuit before the pulse reaches the discharge electrodes.

33. (original) The laser of claim 32 wherein the voltage doubling circuit includes a pair of capacitors coupled in series.

34. (original) The laser of claim 33 wherein each of said capacitors includes a plate connected to the output of the switch.

35. (previously presented) The laser of claim 30, wherein the plurality of IGBTs includes at least two IGBTs connected in series.

36. (previously presented) The laser of Claim 30, wherein the plurality of IGBTs includes at least three series combinations of a single IGBT connected in parallel.

37. (previously presented) The laser of Claim 1, said all solid state switch configured to switch said voltage needed to produce said desired pulse energies without having a step-up transformer disposed within the circuit after the switch.

38. (previously presented) The laser of claim 37 wherein said solid state switch includes a series of insulated gate bipolar transistors (IGBT), said discharge circuit not including a step up voltage transformer.

39. (previously presented) The laser of claim 38 wherein said series of IGBTs are configured to switch a voltage signal of approximately 20 kV.

40. (previously presented) The laser of claim 39 wherein the solid state switch has a rise time of less than 100 ns.

41. (previously presented) The laser of claim 37 further including a voltage doubling circuit for doubling the voltage signal applied to the pulse compressor circuit before the pulse reaches the pair of electrodes.

42. (previously presented) The laser of claim 41 wherein said doubling circuit includes a pair of capacitors.

43. (previously presented) The laser of claim 42 wherein said solid state switch includes at least three parallel paths each including a single IGBT.

44. (previously presented) The laser of claim 43 wherein said series of IGBTs are configured to switch a voltage signal of approximately 20 kV.

45. (previously presented) The laser of Claim 1, wherein the discharge circuit comprises:

said solid state switch for switching an electrical pulse provided by a main storage capacitor charged by a power supply;

a voltage doubling circuit including a pair of capacitors for doubling the voltage of the pulse switched by the solid state switch; and

a pulse compression circuit for compressing the pulse for application to the electrodes.

46. (original) The laser system of Claim 45, wherein the voltage doubled by the voltage doubling circuit is sufficient for the laser system to produce laser pulses of desired energies without a step-up transformer.

47. (previously presented) The laser of Claim 1, wherein the discharge circuit comprises:

said solid state switch including said plurality of IGBTs for switching an electrical pulse provided by a main storage capacitor charged by a power supply, said electrical

pulse having sufficient energy to produce laser pulses of desired energies without disposing a step-up transformer in the discharge circuit after the switch; and

a pulse compression circuit for compressing the pulse for application to the electrodes.

48. (original) An excimer or molecular fluorine laser system, comprising:

an oscillator laser, including:

a first laser tube filled with a gas mixture including an active halogen component;

a first discharge circuit;

a first plurality of electrodes within the first laser tube connected to the first discharge circuit for energizing the gas mixture therein; and

a first optical resonator for generating a laser beam;

an amplifier, including:

a second laser tube filled with a similar gas mixture as said first laser tube;

a second discharge circuit;

a second plurality of electrodes within the second laser tube connected to the second discharge circuit for energizing the gas mixture therein;

a power supply;

a solid state switch for switching an electrical pulse provided by the power supply for providing the electrical pulse to each of the first and second discharge circuits; and

a delay coupled between the switch and the second discharge circuit, such that laser pulses emitted by the oscillator laser are amplified within the amplifier laser tube, wherein the laser system provides output pulses of desired energies.

49. (original) The laser system of Claim 48, wherein the electrical pulses switched by the solid state switch are sufficient to provide output pulses of the laser system at the desired energies without a step-up transformer being disposed within the first discharge circuit.

50. (original) The laser system of Claim 48, wherein the first optical resonator includes a line-narrowing module for narrowing a bandwidth of emitted laser pulses.

51. (original) An excimer or molecular fluorine laser system, comprising:

an oscillator laser, including:

a first laser tube filled with a gas mixture including an active halogen component;

a first power supply;

a first discharge circuit;

a first solid-state switch for switching electrical pulses provided by the first power supply;

a first plurality of electrodes within the first laser tube connected to the first discharge circuit for energizing the gas mixture therein; and

a first optical resonator for generating a laser beam;

an amplifier, including:

a second laser tube filled with a similar gas mixture as said first laser tube;

a second power supply;

a second discharge circuit;

a second solid state switch for switching electrical pulses provided by the second power supply;

a second plurality of electrodes within the second laser tube connected to the second discharge circuit for energizing the gas mixture therein,

wherein each of the first and second switches are configured to receive a trigger signal from a same trigger signal circuit, and the laser system further comprising a delay coupled between the trigger signal circuit and the second solid state switch, such that laser pulses emitted by the oscillator laser are amplified within the amplifier laser tube, wherein the laser system provides output pulses of desired energies.

52. (original) The laser system of Claim 51, wherein the electrical pulses switched by the first and second solid state switches are sufficient to provide output pulses of the laser system at the desired energies without a step-up transformer being disposed within the first discharge circuit.

53. (original) The laser system of Claim 51, wherein the first optical resonator includes a line-narrowing module for narrowing a bandwidth of emitted laser pulses.

Claims 54–57. (canceled)

58. (previously presented) The laser of Claim 1, wherein said switch further includes a series combination of at least two IGBTs in parallel with said other paths.

59. (previously presented) The laser of Claim 1, wherein said switch further includes a series combination of at least three to six IGBTs in parallel with said other paths.

60. (previously presented) An excimer or molecular fluorine laser, comprising:

a laser tube filled with a laser gas;

an optical resonator;

a discharge circuit;

a plurality of electrodes within the laser tube connected to the discharge circuit for exciting the laser gas to produce a laser output beam,

wherein said discharge circuit includes a solid state switch, and

wherein said switch includes a series combination of at least two IGBTs, said series combination being connected in parallel with a single additional IGBT.

Claims 61-63. (canceled)

64. (previously presented) The laser of Claim 25, wherein the plurality of IGBTs includes a parallel combination and each path of the parallel combination includes a single IGBT.

Claims 65-67. (canceled)